

Appl. No. 10/637404
Reply to Office action of 2/23/2005

IN THE CLAIMS

Amendments To The Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 9-14 are canceled.

Listing of Claims:

1. (Original) A field-emission electron source element comprising:
a cathode substrate;
an insulating layer that is formed on the cathode substrate and has an opening;
a lead electrode formed on the insulating layer; and
an emitter formed in the opening;
wherein a surface layer of an electron emitting region of the emitter is doped with
at least one reducing element selected from the group consisting of hydrogen and carbon
monoxide.
2. (Original) The field-emission electron source element according to claim 1,
wherein the emitter is formed of a material containing silicon.
3. (Original) The field-emission electron source element according to claim 1,
wherein the emitter is formed of metal, and a thin film containing silicon is formed on a
surface of the metal.
4. (Original) The field-emission electron source element according to claim 1,
wherein the surface layer has a thickness of 5 nm to 30 nm.
5. (Original) The field-emission electron source element according to claim 1,
wherein the doping with the reducing element is carried out by ion doping.
6. (Original) The field-emission electron source element according to claim 1,
wherein the doping with the reducing element is carried out by plasma doping.

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7. (Original) An image display apparatus comprising the field-emission electron source element according to claim 1.

8. (Original) An image display apparatus comprising:
a vacuum container;
an electron gun disposed inside the vacuum container;
a member for deflecting an electron beam emitted from the electron gun; and
a phosphor layer provided at a position facing the electron gun;
wherein the electron gun comprises the field-emission electron source element according to claim 1, and
the image display apparatus comprises a system for controlling an atmosphere inside the vacuum container to be an atmosphere having a reducing effect on a material for the emitter of the field-emission electron source element.

9-14. (Canceled)